J. Linguistics **48** (2012), 151–186. © Cambridge University Press 2011
doi:10.1017/S0022226711000272 First published online 5 September 2011

Multiple-modal constructions in Mandarin Chinese and their finiteness properties[I]

T.-H. JONAH LIN

Graduate Institute of Linguistics, National Tsing Hua University, Taiwan

(Received 16 July 2009; revised 14 March 2011)

This work examines multiple-modal constructions in Mandarin Chinese. It is shown that modals in Mandarin Chinese are ordered in specific ways, and, while a number of factors contribute to the determination of the hierarchical order of modals, the finiteness of the complement clauses that the modals take plays a particularly important role. A generalization proposed in this paper is that (i) if a modal takes a finite clause as complement, then the modal itself can only occur in a finite context; and (ii) if a modal takes a nonfinite clause as complement, then it can occur in a nonfinite context too. This generalization is shown to account for some ordering phenomena of modals in Mandarin Chinese that would otherwise remain mysterious.

1. Introduction

Mandarin Chinese (henceforth MC) is a language that permits more than one modal in a sentence.[2] The examples in (1)–(4) illustrate.

(1) Zhangsan **keneng** lai.
Zhangsan be.likely.to come
'Zhangsan is likely to come.'

(2) Zhangsan **keneng** **hui** lai.
Zhangsan be.likely.to will come
'It is likely that Zhangsan will come.'

[1] Parts of the material reported in this paper were presented in colloquia and seminars at Nanzan University, National Chung Cheng University, and National Tsing Hua University. I am grateful to the audiences, in particular Mamoru Saito, Keiko Murasugi, Yasuaki Abe, Ian Roberts, Yuji Takano, and Niina Zhang for helpful comments and suggestions. I am also grateful to the two anonymous *JL* referees for their comments and questions. Special thanks go to C.-T. James Huang; my interests in the phenomena reported in this paper were inspired in personal discussions with him. I alone am responsible for all errors. This research is supported, in part, by National Science Council, Taiwan (NSC 96-2411-H-007 -029).

[2] This paper is concerned with modal verbs only; it will not discuss modal adverbs and other non-verbal modal elements.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(3) Zhangsan **keneng hui nenggou** lai.
Zhangsan be.likely.to will be.able.to come
'It is likely that Zhangsan will be able to come.'

(4) Zhangsan **yinggai keneng hui nenggou** lai.
Zhangsan should be.likely.to will be.able.to come
'It should be the case that it is likely that Zhangsan will be able to come.'

In MC, sentences with two modals are very common. Sentences with three or more modals occur less commonly, and their acceptability decreases with an increase in the number of modals. Thus, though (3) is relatively fine to most native speakers of MC, (4) can be harder to accept.[3] But this does not necessarily mean that there is an upper bound to the number of modals permitted in an MC sentence; it is likely that (4) is grammatical but poses processing difficulties for speakers, resulting in relatively lower acceptability. At any rate, the examples in (1)–(4) show that multiple-modal sentences in MC are generally grammatical.

However, the modals in an MC sentence must be ordered in specific ways. For instance, if the order of the two modals in (2) is reversed, the resulting sentence is ungrammatical; likewise, a different ordering of the modals in (4) results in ungrammaticality.

(5) *Zhangsan **hui keneng** lai.
Zhangsan will be.likely.to come

(6) *Zhangsan **yinggai keneng nenggou hui** lai.
Zhangsan should be.likely.to be.able.to will come

Thus, multiple-modal constructions in MC are subject to ordering restrictions. What are those restrictions? This paper explores this question. Specifically, it is shown that in addition to common semantic factors, the well-formedness of multiple-modal constructions in MC has a direct bearing on the FINITENESS of the complement clauses of the modals. This paper makes the following two proposals. First, modals in MC take a clausal complement, which I assume is a TP; it can be finite or nonfinite. Second, the complementation relation between two modals in MC is sensitive to the finiteness of the TP complement of the higher modal. For instance, the possibility modal *keneng* 'be likely to' can only occur in a finite clause; in contrast, the future modal *hui* 'will' may occur in a finite or nonfinite clause. The sensitivity to finiteness accounts for some of the ordering restrictions on MC modals which do not seem to be amenable to other semantic explanations.

[3] My personal estimate is that six or seven MC speakers out of ten would accept a sentence like (3), but only one or two speakers out of ten would accept a sentence like (4).

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

If these proposals are correct, then MC clauses exhibit the finite/nonfinite contrast. There have been debates on whether MC clauses have the syntactic projection TP, and whether they exhibit the finite/nonfinite contrast; see Huang 1982; Li 1990; Tang 1990; Tang 2000; Hu, Pan & Xu 2001; J.-W. Lin 2003, 2006, 2010; Sybesma 2007; among others. One may suppose that since TP is a member of the Core Functional Categories (CFC; Chomsky 2001), the null hypothesis would be that it occurs in all languages (Fukui 1995). But this is just a hypothesis, and it requires empirical validation. In this regard, MC offers an interesting test ground. Mandarin Chinese is a language without morphological tense. However, lack of morphological tense does not entail that the syntactic category TP does not exist in this language. This paper shows that the assumption that MC has TP and the hypothesis that TP in MC exhibits the finite/nonfinite contrast provide an explanation for some of the ordering restrictions on modals in MC sentences. The analysis of this paper, therefore, will contribute to the above-mentioned debate, and also to the understanding of functional categories, in particular the existence of a possibly uniform set of CFCs in natural languages.

The paper is organized as follows. Sections 2 and 3 examine modals in MC and their occurrence in multiple-modal constructions. Section 4 presents evidence to show that epistemic modals in MC, in particular the possibility modal *keneng* 'be likely to', are verbs rather than adverbs. Section 5 discusses the distribution and interpretations of the element *yao* '(lit.) want'. Section 6 introduces the theory of T.-H. J. Lin 2011, which argues for the existence of TP and the finite/nonfinite contrast in MC. Sections 7 and 8 analyze the ordering restrictions of modals in MC sentences and the distribution and interpretations of the element *yao*. Section 9 is the conclusion. There are also two appendices: Appendix A presents evidence to show that the sentence-final particle *le* denotes the perfect aspect; Appendix B provides a brief discussion of the scope properties of the possibility modal *keneng* 'be likely to'.

2. Types of modals in MC

Table 1 presents a summary of the different types of modals and aspectual auxiliaries in MC.[4] Following Palmer (1990), I divide the modals in MC into three general types: the epistemic modals (possibility and necessity), the deontic modals (obligation), and the dynamic modals (ability, permission,

[4] This table only includes modal and aspectual verbs; non-verbal elements are not included. For example, Li & Thompson (1981) list five elements representing four verbal aspects in MC: the suffix *-le* for the perfective aspect, the suffix *-zhe* and the word *zai* for the durative aspect, the suffix *-guo* for the experiential aspect, and morphological reduplication (of the verb) for the delimitative aspect. Among the five elements, only *zai* (which is glossed as progressive aspect in this paper) is an auxiliary verb because it precedes the verb as an independent word. This is why it is listed in Table 1 and the other aspectual elements are not.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

Epistemic		*keneng*	'be likely to'
		yinggai	'should'
Deontic	Obligation	*bixu*	'must'
		yinggai	'should'
		dei/de	'has to'
Dynamic	Ability	*neng/nenggou*	'be able to'
		hui	'be capable of'
	Permission	*keyi*	'be permitted to'
	Volition	*ken*	'be willing to'
		yuanyi	'be willing to'
Future		*hui*	'will'
Aspect		*yao*	'be going to'
		zai	Progressive

Table 1
Types of modals and aspectual auxiliaries in Mandarin Chinese.

and volition). The latter two are also called the 'root modals' (see von Fintel 2006). I separate the future modal *hui* 'will' and the aspectual auxiliaries *yao* '(lit.) want' and *zai* '(lit.) at' as independent types, because their distributions are different from the other modal verbs.

Two points should be noted at this stage. First, like many other languages, a modal in MC may assume more than one reading (see Butler 2003 among many others). For instance, *yinggai* 'should' may assume an epistemic reading or a root (deontic) reading; this is also the case with *keyi* 'be permitted to', which can assume a root reading or an epistemic reading (Lin & Tang 1995). But the ambiguity of modals in MC appears to be more extensive. Hsieh (2004) observes that the modal *hui* 'will' has three different uses, and Hsieh & Lin (2003) observe that *yao* '(lit.) want' has at least five different uses.[5] See the examples in (7)–(9) for the three uses of *hui* 'will', and (10)–(14) for the five uses of *yao* '(lit.) want'.

[5] Hsieh & Lin (2003) observe that the aspectual uses of *yao* can be further divided into the irrealis use and the 'progressive' use. The irrealis use is illustrated by (12). The progressive use is illustrated by (i).

(i) Qiao yao kua le.
bridge want collapse PERF
'The bridge is collapsing.'

The progressive *yao* has a semantic feature that is lacking in the irrealis *yao*: it has a sense of 'imminence' (namely the event is about to take place or is taking place). In this paper we will be concerned with the irrealis *yao* only. In what follows, the term 'the aspectual *yao*' is meant to denote the irrealis *yao*.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(7) Zhangsan **hui** youyong. (ability)[6]
Zhangsan will swim
'Zhangsan can swim.'

(8) Zhangsan mingtian **hui** lai. (future)
Zhangsan tomorrow will come
'Zhangsan will come tomorrow.'

(9) Xiong **hui** dongmien. (generalization)[7]
bear will hibernate
'Bears hibernate.'

(10) Zhangsan **yao** qian. (main verb)
Zhangsan want money
'Zhangsan wants money.'

(11) Zhangsan **yao** hui jia. (control verb)
Zhangsan want return home
'Zhangsan wants to go home.'

(12) Zhangsan mingtian **yao** qu Taibei. (aspectual auxiliary)
Zhangsan tomorrow want go Taipei
'Zhangsan is going to Taipei tomorrow.'

(13) Zhangsan **yao** lai, fouze ta hui you mafan. (obligation modal)
Zhangsan want come otherwise he will have trouble
'Zhangsan must come, otherwise he will be in trouble.'

---

[6] The ability use of *hui* 'will', as in (7), is very different from the ability modal *neng*(*gou*) 'be able to'. *Hui* 'will' denotes intrinsic abilities, whereas *neng*(*gou*) denotes circumstantial ability (Kratzer 1991). See (i) for illustration:

(i) Na-ge difang, wo hui / neng qu.
that-CL place I will be.able.to go
[*hui*] 'That place, I know how to go [as I know the way to get there].'
[*neng*] 'That place, I can go [as there is no hindrance].'

If *hui* is used, the sentence means that the subject has the relevant knowledge and therefore knows how to get to the place in question. If *neng*(*gou*) is used, it means that there is no blockage that would prevent the subject from going to the place.

[7] If *hui* 'will' is removed from (9), the result is still a generic (habitualizing) sentence:

(i) Xiong dongmien.
bear hibernate
'Bears hibernate.'

The modal *hui* seems to contribute a law-like sense to sentence (9); this makes the meaning difference between (9) and (i).

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(14) **Yao** ma ni lai, **yao** ma wo qu. (conditional marker)
want PRT you come want PRT I go
'Either you come, or I go.'

We will not go into the question of why there is such extensive ambiguity with MC modals. However, the multiple readings of the element *yao* '(lit.) want' will be an important topic in later discussion.

The second point to note is that, J.-W. Lin & Tang (1995) argue convincingly that modals in MC are verbs, and they take a clausal complement, specifically a CP (in GB terms, S'). The authors also argue that epistemic modals are raising predicates, and root modals are control predicates. In current grammatical theory, raising predicates are assumed to take a TP complement; besides, Bošković (1997) argues that control predicates also take a TP complement. I therefore assume that modals in MC, epistemic and root alike, take a TP complement.

3. Multiple modals in MC sentences

In the above discussion we saw that the linear order of modals in MC sentences is restricted. In this section we look at the restrictions in more detail.

3.1 *Epistemic modals*

Epistemic modals precede dynamic modals, as is shown in (15)–(16). *Keneng* 'be likely to' must precede *keyi* 'be permitted to'; the reverse order is ungrammatical.

(15) Zhangsan **keneng** **keyi** lai.
Zhangsan be.likely.to be.permitted.to come
'It is likely that Zhangsan is permitted to come.'

(16) *Zhangsan **keyi** **keneng** lai.
Zhangsan be.permitted.to be.likely.to come

3.2 *The future modal*

The future modal *hui* 'will' follows epistemic modals but precedes dynamic modals, as is shown in (17)–(20). As a result, *hui* 'will' may be sandwiched by an epistemic modal and a dynamic modal, as in (21).

(17) Zhangsan **keneng** **hui** lai.
Zhangsan be.likely.to will come
'It is likely that Zhangsan will come.'

(18) *Zhangsan **hui** **keneng** lai.
Zhangsan will be.likely.to come

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(19) Zhangsan **hui nenggou** lai.
Zhangsan will be.able.to come
'Zhangsan will be able to come.'

(20) *Zhangsan **nenggou hui** lai.
Zhangsan be.able.to will come

(21) Zhangsan **keneng hui nenggou** lai.
Zhangsan be.likely.to will be.able.to come
'It is likely that Zhangsan will be able to come.'

3.3 *The necessity modal*

The necessity modal *yinggai* 'should' precedes the possibility modal *keneng* 'be likely to'; the reverse order is ungrammatical:[8]

(22) Zhangsan **yinggai keneng** lai.
Zhangsan should be.likely.to come
'It should be the case that Zhangsan is likely to come.'

(23) *Zhangsan **keneng yinggai** lai le.
Zhangsan be.likely.to should come PERF

3.4 *The deontic modal and epistemic modals*

The possibility modal *keneng* 'be likely to' may precede or follow the deontic modal *bixu* 'must'; see (24)–(25). But the necessity modal *yinggai* 'should' must precede *bixu* 'must'; see (26)–(27).

(24) Zhangsan **keneng bixu** lai.
Zhangsan be.likely.to must come
'It is likely that Zhangsan must come.'

(25) Zhangsan **bixu keneng** lai (fouze jihua hui shibai).
Zhangsan must be.likely.to come otherwise plan will fail
'It has to be the case that Zhangsan is likely to come (otherwise the plan will fail).'

(26) Zhangsan **yinggai bixu** lai.
Zhangsan should must come
'It should be the case that Zhangsan must come.'

(27) *Zhangsan **bixu yinggai** lai le.
Zhangsan must should come PERF

[8] The presence of the sentence-final perfect particle *le* in (23) is to force the epistemic reading for *yinggai* 'should'. Without it, *yinggai* would be construed as an obligation modal.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

3.5 *The deontic modal and dynamic modals*

The deontic modal *bixu* 'must' precedes the dynamic modals; the reverse order is ungrammatical, as (28)–(29) show.

(28) Zhangsan **bixu** **nenggou** lai.
Zhangsan must be.able.to come
'Zhangsan must be able to come.'

(29) *Zhangsan **nenggou** **bixu** lai.
Zhangsan be.able.to must come

3.6 *The deontic modal and the future modal*

The order of the deontic modal *bixu* 'must' and the future modal *hui* 'will' is free; namely, either one may precede the other.

(30) Zhangsan **bixu** **hui** lai.
Zhangsan must will come
'It has to be the case that Zhangsan will come.'

(31) (Zong you yi tian,) Zhangsan **hui** **bixu** xiang wo daoqian.
overall have one day Zhangsan will must toward me apologize
'(Some day in the future) Zhangsan will have to apologize to me.'

3.7 *Dynamic modals*

Co-occurrences of dynamic modals are ungrammatical, perhaps due to semantic conflicts (ability cannot be permitted, for example).

(32) *Zhangsan **nenggou** **keyi** lai.
Zhangsan be.able.to be.permitted.to come

(33) *Zhangsan **keyi** **nenggou** lai.
Zhangsan be.permitted.to be.able.to come

3.8 *Summary*

These ordering restrictions clearly indicate that there is a hierarchy of modals in the syntactic structure of MC sentences. The hierarchy is as follows:

(34) Necessity> { Possibility>Deontic / Deontic>Possibility } >Future>Deontic> { Ability / Permission / Volition }

This hierarchy gives rise to interesting questions. For instance: Why can the deontic modal precede the possibility modal, while all other root modals must follow it? Why can the future modal *hui* 'will' precede the deontic

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

modal *bixu* 'must', but at the same time it has to follow the possibility modal *keneng* 'be likely to', when *bixu* 'must' actually can precede *keneng* 'be likely to'? These questions are intriguing and need explanations. We will turn to them in Section 7.

4. Epistemic modals as verbs

In this section we digress to an important question: the categorial status of epistemic modals in MC. An anonymous *JL* referee reminds of the possibility that epistemic modals in MC could actually be adverbs when they occur in multiple-modal sentences. However, there are reasons to believe that they are verbs rather than adverbs, in single-modal and multiple-modal sentences alike. We will look at the possibility modal *keneng* 'be likely to' as an example. (The necessity modal *yinggai* 'should', as will be shown in Section 7.1, is a strong evidential element and thus is 'extra-propositional'; see Drubig 2001 and von Fintel & Gillies 2006. Being a strong evidential element, it cannot fall under the scope of any other operator. As a result, it is very difficult to come up with reliable tests to show that it is a verb. But this does not undermine its status as a verb, because the necessity modal *must* in English behaves in the same way. See Section 7 for more details.)

First of all, *keneng* can be questioned, negated, and used as a short answer to a question. These are the criteria used by Lin & Tang (1995) to show that modals in MC are verbs. In (35) *keneng* takes the A-not-A form, which is a disjunctive question construction in MC. In (36) *keneng* is negated. In (37) it is used as a short answer to the question (35).

(35) Zhangsan keneng- bu-keneng lai?
Zhangsan be.likely.to- not-be.likely.to come
'Is it likely for Zhangsan to come?'

(36) Zhangsan bu keneng lai.
Zhangsan not be.likely.to come
'It is not likely for Zhangsan to come.'

(37) Keneng.
be.likely.to
'[Zhangsan] is likely to [come].'

Second, in marked contexts, e.g. when it is negated, *keneng* can fall inside the scope of the sentence-final perfect particle *le* and acquire a change-of-state meaning. (For a discussion of the particle *le*, see Appendix A.) This indicates that *keneng* is a verb, not an adverb, because only a verb gets the change-of-state meaning (see Appendix B).[9]

[9] I am grateful to an anonymous *JL* referee, for drawing my attention to the sentence in (38).

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(38) Women **bu keneng** zai jianmien le.
we not be.likely.to again meet PERF
'We cannot [=become not likely to] meet anymore.'

Third, *keneng* can fall within the scope of the focus adverb *zhi* 'only', as in (39). The adverb *zhi* 'only' is low in the structure and presumably adjoins to *v*P or VP.

(39) Zhangsan **zhi keneng** jie shu, bu keneng
Zhangsan only be.likely.to borrow book not be.likely.to
mai shu.
buy book
'Zhangsan may only borrow a book; he is unlikely to buy a book.'

The evidence is the contrast between (40) and (41).

(40) Zhangsan **zhi qingqing** peng ta yi-xia, ta jiu ku le.
Zhangsan only slightly touch him one-time he then cry PERF
'Zhangsan only slightly touched him once, and then he cried.'

(41) *Zhangsan **zhi zuotian** lai, mingtian bu hui lai.
Zhangsan only yesterday come tomorrow not will come
Intended: 'Zhangsan only came yesterday; he will not come tomorrow.'

In (40) *zhi* precedes the VP-level adverb *qingqing* 'slightly', and the sentence is grammatical; in (41) it precedes the TP-level time adverb *zuotian* 'yesterday', but the sentence is ungrammatical. As *keneng* can be preceded by *zhi*', this indicates that *keneng* is low in the structure too. If it is an epistemic adverb, presumably it should be at least as high as T, because an epistemic adverb takes the whole proposition as its scope. The fact that *keneng* is low in the structure casts doubt on the hypothesis that it is an adverb. But if *keneng* is a verb, then its low structural position poses no problem.

Next we turn to *keneng* in multiple-modal sentences. Again, there are reasons to believe that it is still a verb. First, uniformity and parsimony considerations lead us to expect that *keneng* is still a verb in multiple-modal sentences. Second, it can be questioned, negated, and serve as a short answer, as in (42)–(44).[10] Third, it can fall under the scope of the adverb *zhi* 'only', as in (45).

(42) Zhangsan **keneng-bu-keneng** **hui** lai?
Zhangsan be.likely.to-not-be.likely.to will come
'It is likely for Zhangsan to come?'

[10] The example (44) is provided by an anonymous *JL* referee.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(43) Zhangsan **bu keneng hui** lai.
Zhangsan not be.likely.to will come
'It is not likely for Zhangsan to come.'

(44) Q: Zhangsan **keneng hui** lai ma?
Zhangsan be.likely.to will come Q
'It is likely for Zhangsan to come?'
A: **Keneng.**
be.likely.to
'[Zhangsan] is likely to [come].'

(45) Zhangsan **zhi keneng hui** jie shu, bu
Zhangsan only be.likely.to will borrow book not
keneng hui mai shu.
be.likely.to will buy book
'Zhangsan may only borrow a book; he is unlikely to buy a book.'

Let us compare *keneng* with two epistemic adverbs, *haoxiang* 'seemingly' and *dagai* 'probably'. These two adverbs can occur with the future modal *hui* 'will', just like *keneng*; but they cannot be questioned or negated, nor can they fall within the scope of the focus adverb *zhi* 'only'; see (46)–(48).

(46) *Zhangsan **haoxiang** /**dagai-bu-haoxiang** / **dagai** hui lai?
Zhangsan seemingly probably-not-seemingly probably will come

(47) *Zhangsan **bu haoxiang** / **dagai** hui lai.
Zhangsan not seemingly probably will come

(48) *Zhangsan **zhi dagai** / **haoxiang** hui jie shu.
Zhangsan only probably seemingly will borrow book

One more reason to believe that *keneng* is a verb rather than an adverb is that the alleged counterarguments against *keneng* as a verb can usually be subject to alternative analyses, or are simply irrelevant. In what follows we look at two examples.

A *JL* referee suggests an argument against *keneng* as a verb. The sentence in (49) is an interrogative sentence, with *haoxiang* 'seemingly', *dagai* 'probably', and *keneng* preceding *hui* 'will'. The first two elements are known to be adverbs. The referee points out that if the adverbs are used as the short answer to the question, the presence of the copula verb *shi* 'be' is obligatory, as in (50); on the other hand, if *keneng* is used as the short answer, then the copula *shi* is optional, as in (51). Why is the copula *shi* necessary for *haoxiang* 'seemingly' and *dagai* 'probably'? According to the referee, this is because they are adverbs, and they need a verbal host for adjunction.[11] The fact that *keneng* can occur with the copula *shi* (as in (51)), the referee suggests, shows

[11] The referee attributes the observation to Li (1990).

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

that it has a usage as an adverb. A true modal, according to the referee, does not occur with the copula *shi*, as in (52). Therefore, *keneng* in (49) can be an adverb.

(49) Ta haoxiang / dagai / keneng hui qu Taibei ma?
he seemingly probably be.likely.to will go Taipei Q
'Does it seem that he is going to Taipei?/Is he probably going to Taipei?/Is it likely that he is going to Taipei?'

(50) Haoxiang / Dagai *(shi).
seemingly probably be
'It seems so./Probably so.'

(51) Keneng (shi).
be.likely.to be
'It is likely so.'

(52) Q: Ni yao qu Taibei ma?
you want go Taipei Q
'Do you want to go to Taipei?'
A: Yao / *Yao shi.
want want be
'[I] want [to go to Taipei].'

The problem with this argument is that it assumes that the occurrence of the copula *shi* in such sentences is only for the purpose of providing a verbal host for the adjunction of the adverb. But this is not necessarily the case. In fact, the copula *shi* can be a 'pro-proposition'. Consider the following examples:

(53) Ta hui qu Taibei ma?
he will go Taipei Q
'Will he go to Taipei?'

(54) Zhangsan renwei shi.
Zhangsan think be
'Zhangsan thinks so.'

The example in (54) is an answer to the question (53). In this example the embedded copula *shi* clearly represents the proposition 'He will go to Taipei' and thus behaves as a pro-form for the proposition. Note that this use of *shi* should not be confused with the affirmative word *shi* 'yes', as in (55), because embedding (55) into (54) results in unacceptability, as in (56).

(55) Shi, ta hui qu Taibei.
yes he will go Taipei
'Yes, he will go to Taipei.'

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(56) *Zhangsan renwei shi, ta hui qu Taibei.
Zhangsan think yes he will go Taipei
Intended: 'Zhangsan thinks yes, he will go to Taipei.'

The same pro-proposition use of *shi* is seen in the following example:

(57) (Zhangsan xihuan na-ben shu ma?)
Zhangsan like that-CL book Q
Ruguo **shi** dehua, wo jiu mai gei ta.
if be TOP I then buy give him
'(Does Zhangsan like that book?) If so, I will buy and give it to him.'

In this example *shi* is flanked by the conditional operator *ruguo* 'if' and the topic marker *dehua*. This is the position for the antecedent clause of the conditional construction. Thus, *shi* in this example must be a pro-form for a proposition.

Given the above considerations, it is likely that *shi* in (51) is a pro-proposition, and the expression *keneng shi* is to be analyzed as involving an empty subject followed by *keneng* as the main verb, which then is followed by *shi* as the pro-form of the complement clause. This alternative analysis is particularly attractive in view of potential problems that the 'support for adjunction' analysis would have to face. First, in English, an adverb can be used as a short answer, as in (58). Why is MC different? Second, though a single epistemic adverb in MC may not sound good as a short answer to a question, it does not really need to occur with a verb. A sentence-final mood particle can make it perfectly acceptable too, as in (59) (the particle *ba* represents mild agreement). It makes no sense to say that in this example the adverb adjoins to the mood particle, because, among other reasons, the mood particle itself also needs to encliticize to some other element.

(58) Q: Does John like Bill?
A: Probably.

(59) Q: Zhangsan xihuan Lisi ma?
Zhangsan like Lisi Q
'Does Zhangsan like Lisi?'
A: Dagai ba.
probabluy MOOD
'Probably[, I guess].'

Thus, the 'support for adjunction' analysis is clearly less favorable than the 'pro-proposition' analysis. The 'pro-proposition' analysis appears to be even more plausible if we consider the claim to be made in the next section – that epistemic modals in MC take a finite clause as complement, and root modals in MC take a nonfinite clause as complement. If *shi* represents a proposition, and if a finite clause denotes a proposition, then *shi* certainly can replace and represent the complement clause of *keneng*. On the other

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

hand, a root modal, such as *yao* 'want' in (52), takes a nonfinite clause as complement. The nonfinite complement of the root modal in MC is a control clause denoting a propositional function (the empty subject PRO translates into an open place). *Shi* is a pro-form for a proposition, not for a propositional function. This is why the volitional modal *yao* 'want', and root modals in general, cannot occur with *shi*.

In conclusion, the co-occurrence with the copula *shi* does not provide evidence for the claim that *keneng* is an adverb.

The second counterargument has to do with the preposing of the complement of *keneng*.[12] Let us first look at (60), which is a sentence with two modals, *keneng* and *hui* 'will'. In (61) *hui* 'will' is preposed along with its complement, leaving *keneng* in the original position. However, this example is ungrammatical. The argument goes like this: the ungrammaticality of (61) would be hard to explain if *keneng* is a verb, since a modal verb in MC generally permits preposing of its complement, as in (62)–(63). But if *keneng* is an adverb, then the ungrammaticality of (61) receives a natural explanation, because *keneng* has to adjoin to the modal verb *hui* 'will', and the preposing of *hui* 'will' makes the adjunction impossible.

(60) Zhangsan **keneng** **hui** qu Taibei.
Zhangsan be.likely.to will go Taipei
'Zhangsan is likely to go to Taipei.'

(61) ***Hui** qu Taibei, Zhangsan **keneng**.
will go Taipei Zhangsan be.likely.to

(62) Zhangsan keyi qu Taibei.
Zhangsan be.permitted.to go Taipei
'Zhangsan is permitted to go toTaipei.'

(63) Qu Taibei, Zhangsan keyi.
go Taipei Zhangsan be.permitted.to
'Go to Taipei, Zhangsan is permitted to.'

The problem with this argument is that the ungrammaticality of (61) is, in fact, irrelevant to whether or not *keneng* is an adverb. Consider (64)–(65), in which the modals are *hui* 'will' and *nenggou* 'be able to'.

(64) Zhangsan (mingtian) hui nenggou qu Taibei.
Zhangsan tomorrow will be.able.to go Taipei
'Zhangsan will be able to go to Taipei (tomorrow).'

(65) *Nenggou qu Taibei, Zhangsan (mingtian) hui.
be.able.to go Taipei Zhangsan tomorrow will

[12] See Yu 2006 and Huang 2009 for relevant discussion.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

Again, the preposing of the complement of *hui* 'will' results in ungrammaticality, even though *hui* 'will' and *nenggou* 'be able to' are generally assumed to be verbs. It seems that the real generalization is that modals in a sequence cannot be broken up by syntactic operations such as movement. It is not clear why such breaking up leads to ungrammaticality, but one thing is sure: it has nothing to do with whether the first modal is a verb or an adverb.

In conclusion, there is good reason to assume that epistemic modals in MC are verbs. The alleged counterarguments do not really provide sufficient evidence to refute this claim. Thus, in what follows, I will keep to this position and assume that epistemic modals in MC are verbs.

5. The distribution and interpretations of *yao* 'want'

Let us now turn to a different set of phenomena: the multiple interpretations of the element *yao* '(lit.) want'. The literal meaning of *yao* is 'want', as illustrated in (10) above, but it can assume other readings, including the control reading, as in (11), the aspectual reading, in (12), the obligation reading, in (13), and the conditional reading, in (14). It should be noted, however, that *yao* cannot just assume any reading in any syntactic position; its interpretation is restricted by the context in which it occurs. In particular, the reading of *yao* is crucially affected by the modal(s) that it occurs with.

In the following discussion, we will only be concerned with the obligation, aspectual, and control readings of *yao*; we will not be concerned with the verbal and conditional readings.

In the remainder of this section, we consider the distribution and interpretations of *yao* as it interacts with different types of modals.

5.1 *Interaction with epistemic modals*

Yao may precede or follow the possibility modal *keneng* 'be likely to', but it can only follow the necessity modal *yinggai* 'should'; see (66)–(68). When it precedes the possibility modal, *yao* assumes the obligation reading only, as in (67). But when it follows the possibility and necessity modals, it can assume the obligation reading, the aspectual reading, or the control reading, as in (66).

(66) Zhangsan keneng / yinggai yao lai.
Zhangsan be.likely.to should want come
'It is likely/should be the case that Zhangsan has to/is going to/want to come.'
(*yao*: obligation, aspectual, or control reading)

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(67) Zhangsan yao keneng lai (cai xing), (fouze jihua
Zhangsan want be.likely.to come only fine otherwise plan
hui shibai).
will fail
'It has to be the case that Zhangsan is likely to come, (otherwise the plan will fail.)'
(*yao*: obligation reading)

(68) *Zhangsan yao yinggai lai le.
Zhangsan want should come PERF

5.2 *Interaction with the deontic modal*

Yao may precede or follow the deontic modal *bixu* 'must'. In the former case it assumes the obligation reading; in the latter it may assume the obligation, aspectual, or control reading.

(69) Si-zhong ren yao bixu jingchang he
four-kind people want must frequently drink
niunai. (www.eyny.com/thread-575748-1-1.html, 26 April 2009)
milk
'Four kinds of people must drink milk frequently.'
(*yao*: obligation reading)

(70) Zhangsan bixu yao lai.
Zhangsan must want come
'It has to be the case that Zhangsan has to/is going to/want to come.'
(*yao*: obligation, aspectual, or control reading)

5.3 *Interaction with the future modal*

Yao may precede or follow the future modal *hui* 'will'. When it precedes *hui*, it assumes the obligation reading; see (71). When it follows *hui*, it can only assume the obligation reading or the control reading; see (72).[13]

(71) Zhangsan yao hui lai.
Zhangsan want will come
'It has to be the case that Zhangsan will come.'
(*yao*: obligation reading)

---

[13] For (72), the obligation reading may not be as easy to get as the control reading, but some stress on *yao* may help to solicit the reading. Below is an example which shows that *yao* indeed can occur after *hui* 'will' with the obligation reading

(i) Xiang yao dedao hao-de jieguo, biding **hui yao** sheqi xie
think want obtain good result definitely will want give-up some
shenme. (www.wretch.cc/blog/kiki1122005/15034547, 28 April 2009)
what
'[If you] want to obtain a good result, you definitely will have to give up certain things.'

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

Yao / Modals	Precedes a modal?	Follows a modal?
Necessity modal	No	Yes (Obligation, aspectual, control)
Possibility modal	Yes (Obligation)	Yes (Obligation, aspectual, control)
Deontic modal	Yes (Obligation)	Yes (Obligation, aspectual, control)
Future modal	Yes (Obligation)	Yes (Obligation, control)
Dynamic modals	Yes (Obligation)	Yes (Control)

Table 2
The distribution and interpretations of *yao* with different modals.

(72) (Zhong you yi tian,) Zhangsan hui yao xiang wo daoqian.
overall have one.day Zhangsan will want to me apologize
'(Some day in the future) Zhangsan will have to apologize to me.'
(*yao*: obligation or control reading)

5.4 *Interaction with dynamic modals*

Yao may precede the ability, permission, and volition modals, assuming the obligation reading, as in (73). It may also follow them, assuming the control reading, as in (74).[14]

(73) Zhangsan yao nenggou/keyi/yuanyi lai.
Zhangsan want be.able.to/be.permitted.to/be.willing.to come
'Zhangsan has to be able/permitted/willing to come.'
(*yao*: obligation reading)

(74) Zhangsan nenggou/keyi/yuanyi yao hui
Zhangsan be.able.to/be.permitted.to/be.willing.to want return
jia (le)
home PERF
'Zhangsan (has become) able/permitted/willing to want to go home.'
(*yao*: control reading)

5.5 *Summary*

Table 2 summarizes the distribution and interpretations of *yao* as it interacts with different types of modals. At first sight, all this seems arbitrary, but in

[14] The sentence in (74) is somewhat unnatural, in particular with the ability modal *nenggou*. But if the sentence is understood as meaning 'Zhangsan [has become] able to [express that he] wants to go home', it may sound much better. (The presence of the sentence-final particle *le*, which adds the sense of becoming, also helps to improve the naturalness of the sentence.)

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

fact there are principles that govern the occurrences and meanings of *yao*. It will be shown in Section 8 that one of the principles involves the finiteness of the clause in which *yao* occurs.

6. Finiteness of the TP complements of modals

This section introduces the theory of T.-H. J. Lin (2011), which holds that MC has the syntactic category TP and that the TP in MC exhibits the finite/nonfinite contrast. This will lay the foundation for the discussions in the following sections.

A crucial piece of evidence for Lin's theory is the scope interaction between modals and the sentence-final perfect particle *le*, which roughly corresponds to the English aspectual auxiliary *have*, with a strong sense of change of state (see Appendix A). The phenomena are as follows. When *le* occurs in a sentence with an epistemic modal, it falls within the scope of the modal; when *le* occurs in a sentence with a root modal, the root modal falls within the scope of *le*; see (75)–(78) for illustration.[15]

(75) Zhangsan [keneng [[qu Taibei] le]]. (*keneng* > *le*)
Zhangsan be.likely.to go Taipei PERF
'It is likely that Zhangsan has gone to Taipei.'

(76) *Zhangsan [[keneng [qu Taibei]] le]. (**le* > *keneng*)
Zhangsan be.likely.to go Taipei PERF

(77) Zhangsan [[nenggou [qu Taibei]] le]. (*le* > *nenggou*)
Zhangsan be.able.to go Taipei PERF
'Zhangsan has [become] able to go to Taipei.'

(78) *Zhangsan [nenggou [[qu Taibei] le]]. (**nenggou* > *le*)
Zhangsan be.able.to go Taipei PERF

T.-H. J. Lin (2011) follows Shen (2004) in assuming that MC has a functional projection AspP which hosts sentence-final aspectual particles. The particles come in two varieties: the dynamic aspectual particles, such as the perfect particle *le* and the progressive particle *ne*, and the static aspectual particle Ø, which is phonetically empty. Dynamic aspectual particles occur with dynamic predicates (activities, accomplishments, and achievements); the static aspectual particle Ø occurs with static predicates (states); see (79)–(81).

(79) Zhangsan [chi hanbao [$_{Asp}$ le]]. (the perfect *le*)
Zhangsan eat burger PERF
'Zhangsan has eaten the burger.'

[15] See Picallo 1990 and Hacquard 2006 for similar phenomena in Catalan, French, and Italian.

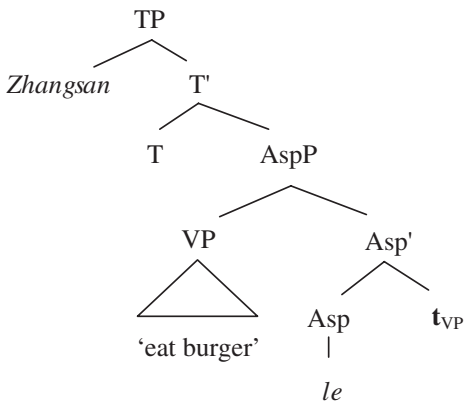
https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(80) Zhangsan [chi hanbao [$_{Asp}$ ne]]. (the progressive *ne*)
Zhangsan eat burger PROG
'Zhangsan is eating the burger.'

(81) Zhangsan [xihuan Lisi [$_{Asp}$ Ø]]. (the static Ø)
Zhangsan like Lisi
'Zhangsan likes Lisi.'

Lin suggests that AspP is the complement of TP. The sentence in (79), for example, has the structure in (82). (T.-H. J. Lin 2006 argues that *le* triggers complement-to-specifier movement of the VP complement of AspP, and this is why it is sentence-final. See also Takida 2009.)

(82)



Lin's argument goes as follows. The perfect particle *le* needs a reference time so as to fix the event time it denotes (see Reichenbach 1947, Hornstein 1993). Presumably the reference time comes from T. If T does not have a value, that is, if it is NONFINITE, then *le* is not licensed, as it does not get a reference time. On the other hand, if T has a value, that is, if it is FINITE, then *le* may occur, because it can obtain a reference time from T and therefore is licensed.[16] The contrast between epistemic modals and root modals pointed out above

[16] In English, control infinitives cannot take the perfect auxiliary *have*, as is shown in (i). But raising infinitives in English may take the perfect auxiliary *have*; in fact if the verb of a raising infinitive is eventive, the perfect auxiliary *have* is obligatory; see (ii).

(i) *John wants to have eaten the burger.
(cf. John wants to eat the burger.)

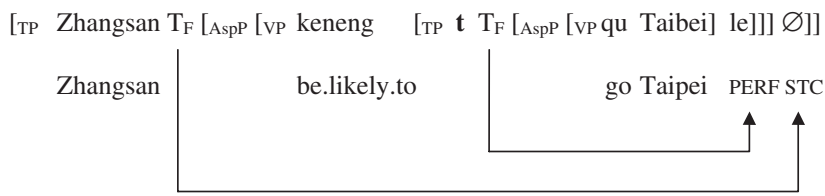
(ii) John seems to have eaten the burger.
(cf. *John seems to eat the burger.)

Martin (2001) argues that the control infinitives in English are tensed, and the raising infinitives are not. But there are objections to Martin's claim, in Wurmbrand 2007, for example. It seems that the truth is the other way around, namely the raising infinitives are

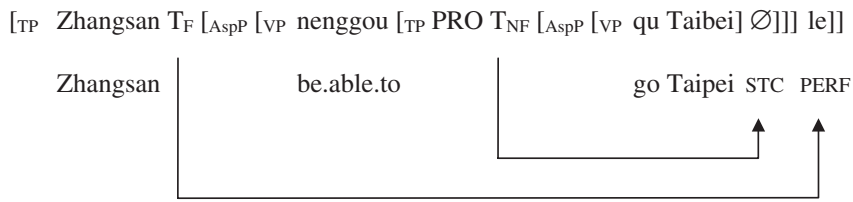
https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(in examples (75)–(78)) can be accounted for on this distinction. The diagrams in (83) and (84) illustrate the two different cases (T_F = finite T; T_{NF} = nonfinite T; STC = static aspect; arrows indicate reference time licensing):[17]

(83)



(84)



In (83), the epistemic modal *keneng* 'be likely to' takes a finite TP complement. The head T of this TP complement has a value and thus *le* is licensed in this embedded TP. This is why *le* falls within the scope of *keneng* 'be likely to' (see Appendix B). On the other hand, in (84), the ability modal *nenggou* 'be able to' takes a nonfinite TP complement, whose head T does not have a value. The perfect particle *le* is not licensed in this embedded TP; therefore, if

---

tensed, and the control infinitives are not (Landau 2000). Note that modal constructions in English also show a similar contrast:

(iii) *John can have eaten the burger.
(cf. John can eat the burger.)

(iv) John may have eaten the burger.
(cf. *John may eat the burger.)

This is precisely what we see in MC (assuming that *le* in MC and *have* in English are more or less equivalent). See Drubig (2001) on the past time construal of the perfect, in particular his discussion of the Past Tense Replacement (PTR) effects (Hofmann 1976).

Note that we need to separate syntactic/semantic tense from morphological tense. Even though the raising infinitive in English is tensed, there is no morphological realization for the tense. Likewise, though MC does not have morphological tense, this does not mean that it does not have syntactic/semantic tense. In fact it does.

[17] According to Shen (2004), in (84), a dynamic light verb representing change of state is merged into the VP containing the modal *nenggou* 'be able to'. This is why the aspectual agreement with *le* is possible. See Appendix A. In (83) and (84) we omit details that do not bear directly on the present discussion.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

le is to occur in this sentence, it can only occur in the matrix Asp. This is why *le* has a wider scope than *nenggou*.

In summary, T.-H. J. Lin (2011) argues that epistemic modals in MC take a finite TP complement, and root modals take a nonfinite TP complement. Lin also examines the future modal *hui* 'will' and shows that it patterns with root modals; that is, it takes a nonfinite TP complement, even though it is a raising predicate on a par with epistemic modals. Consider (85), which shows that *hui* does not permit the perfect particle *le* in its complement clause.

(85) *Zhangsan hui [chi hanbao le].
Zhangsan will eat burger PERF
Intended: 'Zhangsan will have eaten the burger.'

Lin also observes that the deontic modal *bixu* 'must' can take either a finite TP or a nonfinite TP as complement. The examples in (86)–(87) illustrate this ambiguity: the perfect particle *le* can scope over *bixu*, as in (86), or be scoped over by it, as in (87). In (86) *bixu* takes a nonfinite TP complement and in (87) it takes a finite TP complement. Thus, *bixu* patterns with both epistemic modals and root modals.[18]

(86) Zhangsan [[bixu likai] le].
Zhangsan must leave PERF
'It has become the case that Zhangsan must leave.'

(87) Zhangsan [bixu [likai le]].
Zhangsan must leave PERF
'It must be the case that Zhangsan has left.'

7. Accounting for the multiple-modal constructions in MC

In this section and next, we consider the following two questions: What factors cause the hierarchy of modals in (34)? How can the distribution and interpretations of *yao* 'want' be explained? We will see that the finiteness properties of the TP complements of the different kinds of modals play an important role in the answers to these questions.

7.1 *Evidentiality of epistemic modals and finiteness generalizations*

In Section 3 above, it was shown that modals in MC form a hierarchy ((34)), repeated here in (88).

(88) Necessity> { Possibility>Deontic / Deontic>Possibility } >Future>Deontic> { Ability / Permission / Volition }

[18] Hacquard (2006) also points out that the deontic modals can be epistemic-like or root-like.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

At least some of the word orders in (88) are attested cross-linguistically and therefore may have a purely modal-semantic explanation. For instance, it appears to be the case across languages that epistemic modals are higher than root modals (see McDowell 1987, Brennan 1993, Butler 2003, van Gelderen 2003, Barbiers 2006, among others). Besides, in (88), the necessity modal is higher than the possibility modal. Again, this appears to be universally true (see Butler 2003, Barbiers 2006). This clearly has to do with the evidential nature of epistemic modals and their different evidential forces.

Drubig (2001) and von Fintel & Gillies (2006) propose that epistemic modals are evidentials. Drubig (2001) specifically points out that, since evidentials express the speaker's certainty about the proposition, they are 'extra-propositional' and thus cannot be under the scope of any operator. Indeed, the necessity modal *must* in English cannot be negated (see (89)–(90)), cannot be under the scope of past tense ((91)), and cannot be embedded in a question ((92)–(93)).

(89) John must be rich.

(90) John must not be rich. (*necessity reading)

(91) Last night John must be here. (*must* > *last night*; **last night* > *must*)

(92) John must like Bill.

(93) Must John like Bill? (*necessity reading)

The necessity modal *yinggai* 'should' in MC behaves in the same way – it cannot be negated, under the scope of past tense, or questioned; see (94)–(98).[19]

[19] The fact that the necessity modal *must* in English cannot be under the scope of any operator does not undermine its status as a verb. This applies also to the necessity modal *yinggai* 'should' in MC. *Yinggai* parallels *must* in two important ways. First, both have to take a stative complement but not an eventive complement, as in (i)–(vi). Second, both can take an eventive complement in perfect aspect, which then receives a back-shifted temporal interpretation, as in (v)–(vi).

(i) John must be rich.
(ii) *John must eat the burger. (*necessity reading)
(iii) Zhangsan yinggai hen youqian.
Zhangsan should very rich
'Zhangsan should be rich.'
(iv) *Zhangsan yinggai chi hanbao. (*necessity reading)
Zhangsan should eat burger
(v) John must have eaten the burger.
(vi) Zhangsan yinggai chi hanbao le.
Zhangsan should eat burger PERF
'Zhangsan should have eaten the burger.'

The parallels between *yinggai* 'should' and *must* lead us to the conclusion that *yinggai* is also a verb.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(94) Zhangsan yinggai hen youqian.
Zhangsan should very rich
'Zhangsan should be rich.'

(95) Zhangsan bu yinggai hen youqian. (*necessity reading)
Zhangsan not should very rich
'Zhangsan should not be rich.'

(96) Zuo-wan Zhangsan yinggai zai
last-night Zhangsan should at
zheli. ('should' > 'last night'; *'last night' > 'should')
here
'Last night Zhangsan should have been here.'

(97) Zhangsan yinggai xihuan Lisi.
Zhangsan should like Lisi
'Zhangsan should like Lisi.'

(98) Zhangsan yinggai xihuan Lisi ma? (*necessity reading)
Zhangsan should like Lisi Q
'Should Zhangsan like Lisi?'

Drubig (2001) also proposes that possibility modals are evidentials too, but von Fintel & Gillies (2006: 11) point out that in English a possibility modal can be under the scope of some operators; see (99)–(101), which show that possibility modals in English can be negated, questioned, and embedded under the past tense.

(99) There can't have been a mistake. (negation > modal)

(100) Where might you have put the keys? (question > modal)

(101) The keys might have been in the drawer. (past > modal)

Again, the possibility modal *keneng* 'be likely to' in MC behaves in the same way; see (102)–(104).

(102) Zhangsan bu keneng lai. (negation > modal)
Zhangsan not be.likely.to come
'Zhangsan is not likely to come.'

(103) Zhangsan keneng lai ma? (question > modal)
Zhangsan be.likely.to come Q
'Is Zhangsan likely to come?'

(104) Zhangsan qu-nian hai keneng mai fangzi, jin-nian shi
Zhangsan last-year still be.likely.to sell house this-year be
bu keneng le. (past > modal)
not likely.to PERF
'Last year it was still possible for Zhangsan to sell the house; this year it has become not possible.'

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

These examples indicate that, even though necessity modals and possibility modals may both be evidentials, their evidential force can differ: the former is stronger than the latter. In other words, the necessity modal is more 'extra-propositional' than the possibility modal. This results in the order Necessity > Possibility in (88).

However, such modal-semantic factors do not seem to provide explanations of some of the questions arising from the hierarchy in (88). For example, why are epistemic modals higher than *hui* 'will'? This question arises because *hui* 'will' is epistemic-like (see Palmer 1990). Why can it not be higher than, say, the possibility modal *keneng* 'be likely to'? This is all the more puzzling when we see that the deontic modal *bixu* 'must' can be higher than *keneng* 'be likely to'. *Hui* 'will' can be higher than *bixu* 'must'; as a result, one would expect that it could be higher than *keneng* 'be likely to' as well, contrary to fact. There are no obvious reasons for these phenomena.

To answer these questions, I make the following claim: in addition to the fact that an MC modal may take a finite or nonfinite TP complement, whether the modal itself can occur in a nonfinite clause is also a crucial factor. Specifically, I propose the following generalizations:

(105) *The finiteness generalizations for MC modals*
  (a) A modal that takes a nonfinite TP complement can itself occur in a nonfinite context.
  (b) A modal that takes a finite TP complement can only occur in a finite context.

These two generalizations can be deduced from more fundamental assumptions and generalizations. Let us first consider (105a), which covers dynamic modals and the future modal *hui* 'will'. In a sense, the validity of (105a) is self-evident: a verb can be used in a nonfinite clause unless there are specific restrictions that ban it. This is the default option for any verb. What needs explanation is thus (105b). The generalization in (105b) covers epistemic modals. If it is the default option for a verb to be freely used in a nonfinite clause, why is it that epistemic modals cannot occur in nonfinite contexts? This restriction can be derived in the following way. The primary reason for epistemic modals to take a finite clause as complement, as opposed to root modals and *hui* 'will', is that they are evidentials and are 'extra-propositional'. They must scope over the proposition, which syntactically is the clause that they take as complement. They cannot take a nonfinite clause as complement because a nonfinite clause does not express a proposition, only a propositional function. On the other hand, being evidentials, epistemic modals must have direct access to the speaker's coordinate. However, this would be impossible if they occur in a nonfinite clause. Giorgi (2009) proposes that in Italian, an indicative clause has a speaker's coordinate, but a

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

subjunctive clause lacks it.[20] Suppose that such a contrast exists between a finite clause and a nonfinite clause in MC as well; that is, a finite clause in MC contains the speaker's coordinate, whereas a nonfinite clause does not. Thus, if an epistemic modal occurs in a nonfinite clause, it cannot have access to the speaker's coordinate, which results in semantic failure and hence unacceptability. In this way the finiteness of the complement clauses that epistemic modals take are linked to the finiteness of the clauses in which they occur, through their evidentiality.

Let us now examine the finiteness properties of the TP complements of different MC modals in the light of (105a–b). We first look at a summary of what has been established so far, presented in (106a–d).

(106) *The finiteness properties of the TP complements of MC modals*
- (a) Epistemic modals, including the necessity modal *yinggai* 'should' and the possibility modal *keneng* 'be likely to' take a finite TP complement.
- (b) Dynamic modals, including the ability modal *nenggou* 'be able to', the permission modal *keyi* 'be permitted to', and the volition modal *yuanyi* 'be willing to' take a nonfinite TP complement.
- (c) The future modal *hui* 'will' takes a nonfinite TP complement, patterning with the dynamic modals.
- (d) The deontic modal *bixu* 'must' is ambiguous – it can take a finite or nonfinite TP complement.

According to (106b) and (106c), dynamic modals and the future modal *hui* 'will' take a nonfinite TP complement; thus, they should occur in nonfinite contexts, as (105a) claims. On the other hand, according to (106a), epistemic modals take a finite TP complement. According to the generalization in (105b), they can only occur in finite contexts. These predictions are borne out. We find that dynamic modals and the future modal *hui* 'will' can appear in the complement clause of the verb *xuyao* 'need', which is subjunctive and takes a nonfinite complement. On the other hand, epistemic modals cannot appear in the complement clause of *xuyao* 'need', as is shown in the examples in (107)–(108).

(107) Wo xuyao [ni yuanyi/nenggou/keyi/hui lai].
I need you be.willing.to/be.able.to/be.permitted.to/will come
'I need that you be willing to/be able to/be permitted to/would come.'

[20] Giorgi's (2009) observation is that in Italian the embedded indicative clause permits the double-access reading (DAR), whereas the embedded subjunctive clause lacks the DAR reading (with some exceptions). Giorgi links this contrast to the phenomenon of complementizer deletion in the Italian subjunctive clause. A direct consequence of this analysis is that the speaker's coordinate is located in CP. This is somewhat incompatible with the assumption of this paper, namely that epistemic modals in MC take a TP complement rather than a CP complement. I will leave the questions open.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(108) *Wo xuyao [ni yinggai/keneng lai].
I need you should/be.likely.to come

Note that dynamic modals can also occur in finite contexts. A dynamic modal such as *nenggou* 'be able to' can serve as the main predicate of a sentence or occur in an embedded finite clause, as (109)–(110) show. This indicates that root modals are compatible with either finite or nonfinite contexts.

(109) Zhangsan nenggou lai.
Zhangsan be.able.to come
'Zhangsan is able to come.'

(110) Lisi shuo Zhangsan nenggou lai.
Lisi say Zhangsan be.able.to come
'Lisi said that Zhangsan is able to come.'

According to (106d), the deontic modal *bixu* 'must' can take a finite or nonfinite TP complement, and according to (105a), it should be able to occur in nonfinite contexts, because it has the option of taking a nonfinite complement. This prediction is borne out; see (111)–(112):[21]

(111) Wo yaoqiu [nimen dou bixu lai].
I demand you all must come
'I demand that all of you must come.'

(112) Zhangsan mingling Lisi [Wangwu bixu lai].
Zhagsan order Lisi Wangwu must come
'Zhangsan ordered Lisi that Wangwu must come.'

In the following subsections we will see that the generalizations (105a–b) help to account for the hierarchy of modals in (88) (in conjunction with the modal-semantic factors pointed out above).

7.2 *Epistemic modals*

Epistemic modals always precede dynamic modals. Epistemic modals take a finite TP complement. Dynamic modals can occur in finite contexts, so they can occur in the complement clauses of epistemic modals. The reverse word order is ungrammatical, because dynamic modals take a nonfinite TP complement. Epistemic modals cannot occur in nonfinite contexts.

[21] *Bixu* 'must' is not very good in the complement clause of *xuyao* 'need'. Maybe this is because the deontic force of *bixu* 'must' requires a stronger speech act as its background context, such as demanding and ordering in (111)–(112).

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

7.3 *The future modal*

The future modal *hui* 'will' follows epistemic modals but precedes dynamic modals. *Hui* takes a nonfinite TP complement and therefore it cannot take an epistemic modal in its complement clause. Thus, *hui* has to follow epistemic modals but not precede them. On the other hand, it can take dynamic modals in its complement, because these modals can occur in nonfinite contexts. (But dynamic modals cannot take *hui* in their complement clauses; presumably this has to do with the fact that raising predicates tend to take wider scope than control predicates.[22])

7.4 *The possibility modal and the deontic modal*

The possibility modal *keneng* 'be likely to' may precede or follow the deontic modal *bixu* 'must'. *Keneng* takes a finite TP complement and therefore can only occur in finite contexts. *Bixu* can take a finite TP complement, and thus can occur in finite contexts too. Consequently, the two modals may occur in each other's complement clause, resulting in free ordering of the two.

7.5 *The deontic modal and the future modal*

The order between the deontic modal *bixu* 'must' and the future modal *hui* 'will' is free. Recall that *bixu* can take either a finite TP complement or a nonfinite TP complement, that is, it has a 'finite version' and a 'nonfinite version'. In the order *bixu* > *hui*, the complement clause of *bixu* can be finite or nonfinite; *hui* is compatible with either. In the order *hui* > *bixu*, because *bixu* can assume the 'nonfinite version', it can occur in the nonfinite TP complement of *hui*.

7.6 *Word order puzzles resolved*

Now, the word order puzzles of MC modals that cannot be readily accounted for by known modal-semantic factors can be explained by the generalizations in (105). Let us reiterate the questions from Section 7.1 above. Why do epistemic modals precede *hui* 'will'? Why is it that *hui*, which is epistemic-like, cannot precede epistemic modals? In particular, why is it that

[22] English permits the word order *seem* > *want* but not the reverse:

(i) John seems to want to eat the burger.
(ii) *John wants to seem to (have) eaten the burger.

These two verbs are intensional verbs. *Seem* is epistemic-like and *want* is root-like, so *seem* precedes *want*. (Incidentally, (ii) may be acceptable if *seem* is used as a control verb. See Bošković 1997 for some discussion on the control use of raising predicates.)

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

hui cannot precede the possibility modal *keneng* 'be likely to', even though it can precede the deontic modal *bixu* 'must', and *bixu* 'must' can precede *keneng* 'be likely to'? The answers to these questions are as follows. First, *hui* 'will' takes a nonfinite TP complement, yet epistemic modals cannot occur in nonfinite contexts. This is why the order has to be Epistemic > *hui* but not *hui* > Epistemic, even though *hui* is epistemic-like. Second, the two occurrences of the deontic modal (*bixu* 'must') in the hierarchy in (88) – the one that precedes *hui* 'will' ('Future') and the one that follows it – in fact arise from the ambiguity of *bixu* 'must'. The one that precedes *hui* 'will' is the 'finite version', and the one that follows it is the 'nonfinite version'. The finite *bixu* can take *keneng* 'be likely to' in its TP complement; the nonfinite *bixu* occurs in the TP complement of *hui* 'will'. The two versions must be distinguished. Thus, the finiteness properties of the TP complements determine the word order of these modals.

The above discussion of the ordering of different MC modals provides supporting evidence for generalizations (105a–b). In the next section we will see that these generalizations, along with some ancillary assumptions, account for the distribution and interpretations of *yao* 'want'. This will again provide supporting evidence for (105a–b).

8. The distribution and interpretations of *yao* 'want' again

8.1 *Some ancillary assumptions*

To account for the distribution and interpretations of *yao* 'want', I make the following ancillary assumptions. First, I assume that when *yao* 'want' functions as a control verb, it is essentially the same as the English counterpart *want*, namely it takes a complement clause with PRO subject. When *yao* functions as an obligation modal, it is no different from the deontic modal *bixu* 'must'. That is, it is syntactically and semantically a deontic modal verb. When *yao* functions as an aspectual auxiliary, I assume that it is the head of AspP (see Section 6 above). In this use it is interpreted as 'be going to'.

Second, when *yao* assumes the aspectual reading 'be going to', it must occur with an eventive predicate. Specifically, it cannot occur with a stative predicate. This is kind of self-evident, because the aspectual meaning 'be going to' is only compatible with action and change of state.

(113) Zhangsan yao lai.
Zhangsan want come
'Zhangsan is going to come.'

(114) *Zhangsan yao gaoxing.
Zhangsan want happy
Intended: 'Zhangsan is going to be happy.'

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

Third, when *yao* assumes the control reading, its complement TP must take an eventive predicate. See the contrast between (115) and (116) for illustration. It is not clear why this is the case, as the English control verb *want* clearly permits a stative predicate in its complement clause. No matter what the reason is, *yao* must have an eventive predicate in its complement clause when it functions as a control verb.

(115) Zhangsan yao hui jia/chi hanbao.
Zhangsan want return home/eat burger
'Zhangsan wants to go home/eat a burger.'

(116) *Zhangsan yao gaoxing/youqian.
Zhangsan want happy/rich
Intended: 'Zhangsan wants to be happy/rich.'

With these assumptions, we are ready to account for the distribution and interpretations of *yao* as it interacts with the different types of modals.

8.2 *Interaction with the possibility modal* keneng '*be likely to*'

We start with the possibility modal *keneng* 'be likely to'. According to Table 2 above, *yao* can precede *keneng* assuming the obligation reading, or follow it assuming the obligation, aspectual, or control reading.

First, we look at the case where *yao* precedes *keneng*. Because modals are stative predicates, *yao* cannot assume the aspectual reading, as the aspectual reading is only compatible with eventive predicates. *Yao* cannot assume the control reading either, because the embedded predicate of the control *yao* must be eventive, yet *keneng* is stative (in fact all modals are). As a consequence, the only permissible reading for *yao* is the obligation reading.

The second case to consider is one where *yao* follows *keneng*. *Keneng* takes a finite TP as complement; *yao* can freely assume the obligation reading, the aspectual reading, or the control reading in this finite TP. This is why all three readings are permissible.

8.3 *Interaction with the necessity modal* yinggai '*should*'

According to Table 2, *yao* cannot precede *yinggai*; it can only follow *yinggai* assuming the obligation, aspectual, or control reading.

When *yao* precedes *yinggai*, it cannot assume the aspectual reading, because *yinggai* is stative. Nor can it assume the control reading, because, again, *yinggai* is stative. *Yao* cannot assume the obligation reading either, because *yinggai* is a strong evidential element and cannot be scoped over by any other modal. Consequently, *yao* does not have any acceptable reading. This is why it cannot precede *yinggai*.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

When *yao* follows *yinggai*, it occurs in a finite TP clause. In that TP *yao* can freely assume the obligation reading, the aspectual reading, or the control reading.

8.4 *Interaction with the deontic modal* bixu '*must*'

The situation of *bixu* 'must' is the same as *keneng* 'be likely to'; namely *yao* can precede or follow it, assuming the obligation reading in the former case and the obligation, aspectual, or control reading in the latter case.

The account is the same too. First we look at the case when *yao* precedes *bixu. Yao* cannot assume the aspectual reading and the control reading, as *bixu* is stative. What is interesting is that *yao* can assume the obligation reading, even when it precedes the deontic modal *bixu*. MC permits multiple obligation modals in a row; see (117) for example. So there is no problem for *yao* to assume the obligation reading.

(117) Zhangsan bixu dei likai.
Zhangsan must must leave
'Zhangsan must have to leave.'

When *yao* follows *bixu*, since *bixu* can take a finite TP complement, *yao* can freely assume the aspectual, control, or obligation reading in that finite TP.

Remember that *bixu* has a nonfinite version. We will not go into the possible readings of *yao* in the complement clause of the nonfinite *bixu*. We will come to the readings of *yao* in a nonfinite TP next.

8.5 *Interaction with the future modal* hui '*will*'

Next we consider the future modal *hui* 'will'. According to Table 2, *yao* can precede *hui* assuming the obligation reading, or follow it assuming the obligation or control reading.

When *yao* precedes *hui*, it cannot assume the aspectual reading and the control reading, because *hui* is stative. The only permissible reading is the obligation reading. When *yao* follows *hui*, it can assume the obligation reading. This is possible because the deontic modal *bixu* 'must' has a nonfinite version, and presumably the obligation *yao* does too. This nonfinite obligation *yao* can occur in the nonfinite TP complement of *hui. Yao* can also assume the control reading, as nothing prevents *yao* from functioning as a control verb in a nonfinite TP complement. But it cannot assume the aspectual reading. I propose that this is because the aspectual reading requires support from a finite T, on a par with the perfect particle *le* (see Section 6 above). That is, the aspectual reading ('be going to') needs a reference time from T to fix the event time it denotes, which cannot be achieved in a

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

nonfinite clause. Thus, *yao* cannot assume the aspectual reading in the nonfinite TP complement of *hui*.

8.6 *Interaction with dynamic modals*

According to Table 2, *yao* can precede dynamic modals assuming the obligation reading, or follow them assuming the control reading. When *yao* precedes these modals, for familiar reasons (i.e. those modals being stative) it can only assume the obligation reading. When it follows these modals, it cannot assume the aspectual reading, for the nonfinite TP complement of these modals does not support this reading. It cannot assume the obligation reading because MC does not permit the obligation modal to occur lower than these modals. (See the hierarchy in (88) – presumably this is because semantic conflicts result if a deontic modal occurs in the complement of a dynamic modal. First, dynamic modals typically take an eventive predicate in their complement; second, deontic obligation is not an ability, a volition, or a permitted thing.) The only possibility left is the control reading. This is why *yao* can only assume the control reading when it follows dynamic modals.

8.7 *Summary*

The above discussion shows clearly that the distribution and interpretations of *yao* are exactly as we expect. Modal semantics does not explain all the questions; the finiteness properties of modals and their TP complements are crucial too. This is particularly clear in the cases of *hui* 'will' and dynamic modals. For example, without the finiteness contrast, it would be difficult to explain why *yao* cannot assume the aspectual reading in the complement clauses of those modals, and why *yao* can assume the obligation reading both preceding and following *hui*. All this lends further support for the finite/nonfinite contrast in MC clauses and the generalizations in (105).

9. Conclusion

I have shown in this paper that Mandarin Chinese clauses exhibit the finite/nonfinite contrast, and that this contrast has a substantial impact on the multiple-modal constructions. The phenomena reported in this work shed a new light on the debate concerning the TP projection in MC and the finiteness of MC clauses. If the analyses presented in this work are correct, MC indeed has the category T, and it can be finite or nonfinite, even though there is no morphological tense in this language.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

APPENDIX A

On the sentence-final perfect particle *le*

Mandarin Chinese has two aspectual elements with the phonetic form *le*: one is the sentence-final perfect particle *le* (glossed as PERF), and the other is the perfective verbal suffix *-le* (glossed as PFTV, usually represented with a hyphen). They can occur in the same sentence, as in (A1).

(A1) Zhangsan chi-le hanbao le.
Zhangsan eat-PFTV burger PERF
'Zhangsan has eaten the burger.'

According to Klein, Li & Hendricks (2000) and J.-W. Lin (2000), the verbal suffix *-le* is an assertion marker or a realization operator, and thus only exhibits an impoverished aspectual function. We have been concerned with the sentence-final perfect particle *le* only; verbal suffix *-le* does not concern us in this paper.

The nature of the particle *le* needs some clarification. I adopt the theory of Shen (2004) according to which the sentence-final particle *le* denotes the perfect aspect. This is different from the widely held view, according to which *le* is an inchoative marker, or a 'new situation' marker (Li & Thompson 1981). Notably, *le* appears to trigger a change-of-state meaning; see (A2)–(A3).

(A2) Zhangsan hen gao.
Zhangsan very tall
'Zhangsan is tall.'

(A3) Zhangsan gao le.
Zhangsan tall PERF
'Zhangsan has become tall.'

But in Shen's (2004) theory, the change-of-state meaning does not come from the meaning of *le* itself; it arises from the aspectual agreement between *le* and the predicate of the sentence. According to Shen, perfect aspect, which *le* denotes, is a dynamic aspect; as a result, the predicate of the sentence to which *le* is appended must be dynamic as well. If the predicate is static, a change-of-state light verb must be merged into the structure to make it dynamic, so as to agree with *le*. Thus, (A3) would have a structure in (A4), with the merger of a dynamic *v* denoting change of state. *Le* is a perfect aspect marker throughout. See Shen 2004 for more details.

(A4) Zhangsan [$\boldsymbol{v}_{[+D]}$ [$\text{gao}_{[-D]}$]] $\text{le}_{[+D]}$]
(*v* agrees with *le*, both being dynamic)

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

There is evidence that the particle *le* is a perfect aspect marker, rather than an inchoative marker. Consider the following examples (see Liao 2004 for relevant discussion):

(A5) 1492 nian, Gelunbu faxian-le xin dalu.
1492 year Columbus discover-PFTV new continent
'In 1492, Columbus discovered the new world.'

(A6) 1492 nian, Gelunbu (zhongyu) faxian xin dalu le.
1492 year Columbus finally discover new continent PERF
'In 1492, Columbus (finally) discovered the new world.'

(A7) #1500 nian, Gelunbu faxian-le xin dalu.
1500 year Columbus discover-PFTV new continent
'In 1500, Columbus discovered the new world.' (false proposition)

(A8) 1500 nian, Gelunbu (yijing) faxian xin dalu le.
1500 year Columbus already discover new continent PERF
'In 1500, Columbus had (already) discovered the new world.'
(true proposition)

The sentences in (A5) and (A7) on the one hand and in (A6) and (A8) on the other differ minimally in the aspect marker that is taken – in the former pair of examples, it is the verbal perfective suffix *-le*, but in the latter pair, it is the perfect particle *le*. The result is also different. In (A5) and (A6), the year given is 1492, and the two sentences are both acceptable; the suffix *-le* and final particle *le* make no difference. In (A7) and (A8), however, the year given is 1500, eight years after the discovery. It turns out that the suffix *-le* makes the sentence ((A7)) truth-conditionally false, but the particle *le* renders the sentence ((A8)) acceptable. In (A8) the particle *le* clearly associates the event time (the time of discovery) to a given reference time (the year 1500). This is precisely what perfect aspect does. Sentences such as (A8), therefore, provide strong evidence for *le* as a perfect aspect marker.

Note that even in (A6) the particle *le* is still a perfect aspect marker. In English the perfect aspect *have* obligatorily enforces a back-shifted reading of the event time relative to the reference time; as a result the perfect auxiliary *have* cannot be used in the same way as *le* in (A6), in which case the reference time is identical to the event time itself. But in some European languages, such as the Romance languages and the continental Germanic languages, this is permitted (see Hofmann 1976, Drubig 2001). Compare the following examples (from Drubig 2001: 16–17, examples (40)–(41)):

(A9) *English*
(a) He left last Tuesday.
(b) *He has left last Tuesday.
(c) He has already left.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(A10) *German*
(a) Sie ging gestern nach hause
'She went home yesterday.'
(b) Sie ist gestern nach hause gegangen
'She went home yesterday.'
(c) Sie ist schon nach hause gegangen
'She has already gone home.'

Thus, the particle *le* is the same as the perfect aspect in German and other European languages in permitting identification of the reference time with the event time. This may be the source of the mistaken impression that in examples such as (A3) and (A6) *le* is an inchoative marker. In fact it is not; in those sentences it still denotes the perfect aspect.

APPENDIX B

The scope of the possibility modal

Generally, epistemic modals in Mandarin Chinese resist being under the scope of other operators; this clearly is related to their evidential nature (see Section 7.1 above). This is why *le* does not occur in the matrix Asp in sentences like (83) in Section 6, where the main verb of the matrix clause is the possibility modal *keneng* 'be likely to'. But in some marked contexts it is possible to force the possibility modal *keneng* under the scope of the perfect particle *le*. One example is when *keneng* is negated, as an anonymous *JL* referee pointed out; see (B1). Another example is when *keneng* is modified by the repetitive adverb *you* 'again', which forces a wide scope reading of *le* (T.-H. J. Lin & Liu 2009); see (B2).

(B1) Women bu keneng zai jianmien le.
we not be.likely.to again meet PERF
'We can't meet anymore.'
(='It has become the case that we are not likely to meet anymore.')

(B2) Mingtian you keneng yao xia yu le.
tomorrow again be.likely.to be.going.to fall rain PERF
'It becomes the case again that it is likely to rain tomorrow.'

Even though *keneng* is within the scope of *le* in these examples, it can still be claimed that it takes a finite complement. Specifically, in MC, if the matrix clause takes *le*, then the embedded clause cannot take *le*. The perfect particle *le* cannot occur in both the matrix clause and in the embedded clause. See the following examples for demonstration.

(B3) Zhangsan zhidao na-ge xiaoxi le.
Zhangsan know that-CL news PERF
'Zhansgan has known the news.'

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

(B4) Zhangsan zhidao [Lisi dao Taibei le].
Zhangsan know Lisi arrive Taipei PERF
'Zhangsan knows that Lisi has arrived in Taipei.'

(B5) *Zhangsan zhidao [Lisi dao Taibei le] le.
Zhangsan know Lisi arrive Taipei PERF PERF
Intended: 'Zhangsan has known that Lisi has arrived in Taipei.'

It is not clear why there is such a restriction, but in the case of (B1)–(B2) above, if the matrix clause has *le*, then naturally the embedded clause, namely the complement TP of *keneng*, cannot take *le*.

REFERENCES

Barbiers, Sjef. 2006. The syntax of modal auxiliaries. In Martin Everaert, Henk van Riemsdijk, Rob Goedemans & Bart Hollebrandse (eds.), *The Blackwell companion to syntax*, vol. 5, 1–22. Malden, MA: Blackwell.

Bošković, Željko. 1997. *The syntax of nonfinite complementation*. Cambridge, MA: MIT Press.

Brennan, Virginia M. 1993. *Root and epistemic modal auxiliary verbs*. Ph.D. dissertation, University of Massachusetts, Amherst.

Butler, Jonny. 2003. A minimalist treatment of modality. *Lingua* 113, 967–996.

Chomsky, Noam. 2001. Derivation by Phase. In Michael J. Kenstowicz (ed.), *Ken Hale: A life in language*, 1–52. Cambridge, MA: MIT Press.

Drubig, Hans Bernhard. 2001. On the syntactic form of epistemic modality. Ms., University of Tübingen.

Fukui, Naoki. 1995. The principles-and-parameters approach: A comparative syntax of English and Japanese. In Masayoshi Shibatani & Theodora Bynon (eds.), *Approaches to language typology*, 327–371. Oxford: Oxford University Press.

Giorgi, Alessandra. 2009. Toward a syntax of the subjunctive mood. *Lingua* 119, 1837–1858.

Hacquard, Valentine. 2006. *Aspects of modality*. Ph.D. dissertation, MIT.

Hofmann, T. Ronald. 1976. Past tense replacement and the modal system. In James D. McCawley (ed.), *Notes from the linguistic underground* (Syntax and Semantics 7), 85–100. New York: Academic Press.

Hornstein, Norbert. 1993. *As time goes by*. Cambridge, MA: MIT Press.

Hsieh, I.-T. Chris. 2004. Genericity and adverbial quantification: From a Chinese perspective. Masters thesis, National Tsing Hua University.

Hsieh, I.-T. Chris & T.-H. Jonah Lin. 2003. On the interplay of event structure and aspect in syntax: A case study of *yao*. Ms., National Tsing Hua University.

Hu, Jianhua, Haihua Pan & Liejiong Xu. 2001. Is there a finite vs. nonfinite distinction in Chinese? *Linguistics* 39.6, 1117–1148.

Huang, C.-T. James. 1982. *Logical relations in Chinese and the theory of grammar*. Ph.D. dissertation, MIT.

Huang, X.-Y. Kevin. 2009. Multiple-modal constructions in Mandarin Chinese: A view from cartography and MP. Masters thesis, National Tsing Hua University, Taiwan.

Klein, Wolfgang, Ping Li & Hemriette Hendriks. 2000. Aspect and assertion in Mandarin Chinese. *Natural Language & Linguistic Theory* 18.4, 723–770.

Kratzer, Angelika. 1991. Modality. In Arnim von Stechow & Dieter Wunderlich (eds.), *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*, 639–650. Berlin: Walter de Gruyter.

Landau, Idan. 2000. *Elements of control*. Dordrecht: Kluwer.

Li, Charles N. & Sandra A. Thompson. 1981. *Mandarin Chinese*. Berkeley, CA: University of California Press.

Li, Y.-H. Audrey. 1990. *Order and constituency in Mandarin Chinese*. Dordrecht: Kluwer.

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press

Liao, W.-W. Roger. 2004. The architecture of aspect and duration. Masters thesis, National Tsing Hua University, Taiwan.
Lin, Jo-Wang. 2000. On the temporal Meaning of the verbal *-le* in Chinese. *Language and Linguistics* 1.2, 109–133.
Lin, Jo-Wang. 2003. Temporal reference in Mandarin Chinese. *Journal of East Asian Linguistics* 12.3, 259–311.
Lin, Jo-Wang. 2006. Time in a language without tense: The case of Chinese. *Journal of Semantics* 23.1, 1–53.
Lin, Jo-Wang. 2010. A tenseless analysis of Mandarin Chinese revisited: A response to Sybesma 2007. *Linguistic Inquiry* 41.2, 305–329.
Lin, Jo-Wang & C.-C. Jane Tang. 1995. Modals as verbs in Chinese: A GB perspective. *The Bulletin of Institute of History and Philology* 66, 53–105. Taiwan: Academia Sinica.
Lin, T.-H. Jonah. 2006. Complement-to-specifier movement in Mandarin Chinese. Ms., National Tsing Hua University.
Lin, T.-H. Jonah. 2011. Finiteness of clauses and raising of arguments in Mandarin Chinese. *Syntax* 14.1, 48–73.
Lin, T.-H. Jonah & C.-M. Louis Liu. 2009. 'Again' and 'again': A grammatical analysis of *you* and *zai* in Mandarin Chinese. *Linguistics* 47.5, 1183–1210.
Martin, Roger. 2001. Null case and the distribution of PRO. *Linguistic Inquiry* 32.1, 141–166.
McDowell, Joyce. 1987. *Assertion and modality*. Ph.D. dissertation, University of Southern California.
Palmer, Frank Robert. 1990. *Modality and the English modals*, 2nd edn. London: Langman.
Picallo, M. Carme. 1990. Modal verbs in Catalan. *Natural Language & Linguistic Theory* 8, 285–312.
Reichenbach, Hans. 1947. *Elements of symbolic logic*. New York: Free Press.
Shen, Li. 2004. Aspect agreement and light verbs in Chinese: A comparison with Japanese. *Journal of East Asian Linguistics* 13.2, 141–179.
Sybesma, Rint. 2007. Whether we tense-agree overtly or not. *Linguistic Inquiry* 38.3, 580–587.
Takida, Kensuke. 2009. If Chinese is head-initial. Japanese cannot be. *Journal of East Asian Linguist* 18, 41–61.
Tang, C.-C. Jane. 1990. *Chinese phrase structure and the extended X'-theory*. Ph.D. dissertation, Cornell University.
Tang, Ting-Chi. 2000. Hanyu de xianding ziju yu fei- xianding ziju [Finite and nonfinite clauses in Chinese]. *Language and Linguistics* 1, 191–217.
van Gelderen, Elly. 2003. Asp(ect) in English modal complement. *Studia Linguistica* 57.1, 27–43.
von Fintel, Kai. 2006. Modality and language. In Donald M. Borchert (ed.), *Encyclopedia of philosophy – second edition*, vol. 10, 20–27. Detroit, IL: MacMillan Reference USA.
von Fintel, Kai & Anthony S. Gillies. 2006. Epistemic modality for dummies. Ms., MIT & University of Michigan.
Wurmbrand, Susanne. 2007. Infinitives are tenseless. *University of Pennsylvania Working Papers in Linguistics* 13.1, 407–420.
Yu, H.-H. Rex. 2006. Modal adverbs in interrogatives. Presented at the 2006 Student Workshop on East Asian Linguistics (SWEAL-2006), National Tsing Hua University, Taiwan.

Author's address: *Graduate Institute of Linguistics, National Tsing Hua University, 101, Section 2, Guangfu Road, Hsinchu 300,Taiwan*
jonahlin@mx.nthu.edu.tw

https://doi.org/10.1017/S0022226711000272 Published online by Cambridge University Press